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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,847	02/11/2002	Matthias Stecher	WMP-IFT-699	6635

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LERNER AND GREENBERG, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480

EXAMINER

PRENTY, MARK V

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,847

Applicant(s)

STECHER ET AL.

Examiner

MARK V PRENTY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8,10,11 and 13 is/are rejected.
- 7) ☒ Claim(s) 3,4,9,12 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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This Office Action is in response to the response filed October 23, 2003.

Claims 1, 2, 5, 6, 8, 10, 13 and 11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira (United States Patent 6,097,063, already of record) together with Letavic et al. (United States Patent 6,221,737 – hereafter Letavic – already of record) and Assaderaghi et al. (United States Patent 6,121,661 – hereafter Assaderaghi – already of record).

With respect to independent claim 1, Fujihira discloses a semiconductor component (see the entire reference, particularly Fig. 6), comprising: a semiconductor substrate 5; an insulation layer 6 on said semiconductor substrate, said insulating layer having an unspecified thickness; a semiconductor layer configured on said insulation layer; a first doped terminal zone 9 and a second doped terminal zone 8 formed in said semiconductor layer; and a drift zone 190 formed in said semiconductor layer; said drift zone formed between said first doped terminal zone and said second doped terminal zone, said drift zone including a plurality of complementary doped adjacent sections 1 and 2.

There are two differences between Fujihira's semiconductor component and claim 1's semiconductor component.

The first difference between Fujihira's semiconductor component and claim 1's semiconductor component is the insulating layer of claim 1's silicon-on-insulator (SOI) structure has a thickness of between 50 nm and 200 nm (Fujihira does not disclose the thickness of its analogous insulating layer 6).

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The second difference between Fujihira's semiconductor component and claim 1's semiconductor component is at least one of claim 1's first and second doped terminal zones directly adjoins the semiconductor substrate.

With respect to the first difference, Letavic teaches that the insulating layer of a power SOI structure is typically 100 nm to 5000 nm (see the paragraph bridging columns 3 and 4).

It would have been obvious to one skilled in this art to form Fujihira's layer 6 100 nm to 5000 nm thick because Letavic teaches that a power SOI structure's insulating layer typically has such a thickness.

With respect to the second difference, Assaderaghi teaches connecting an SOI MOSFET's source and drain regions to the underlying semiconductor substrate in order to provide ESD (electrostatic discharge) protection and improved heat dissipation (see the entire reference, particularly Fig. 4A).

It would have been obvious to one skilled in this art to connect Fujihira's drain and source regions 9 and 8 (i.e., its first and second doped terminal zones) to underlying substrate 5 in order to provide Fujihira's semiconductor component with ESD protection and improved heat dissipation, as taught by Assaderaghi.

Claim 1 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 2, as stated above with respect to independent claim 1, it would have been obvious to one skilled in this art to connect Fujihira's drain and source regions 9 and 8 (i.e., its first and second doped terminal zones) to

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underlying substrate 5 in order to provide Fujihira's semiconductor component with ESD protection and improved heat dissipation, as taught by Assaderaghi.

Claim 2 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 5, Fujihira's semiconductor component further comprises a depletion zone 7 configured between said second terminal zone 8 and said drift zone 190; said depletion zone having a (p) conduction type; and said first terminal zone 9 and said second terminal zone 8 having a conduction type (n) that is complementary to said conduction type of said depletion zone.

Claim 5 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 6, Fujihira's first terminal zone 9 has a (n) conduction type; and its drift zone 1(190) (see Fig. 6B) has a (n) conduction type that is equivalent to the conduction type of said first terminal zone.

Claim 6 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 8, Fujihira's plurality of complementary doped adjacent sections includes first sections 1 and second sections 2; said first sections 1 and said first terminal zone 9 are of a first (n) conduction type; said first sections are connected to said first terminal zone; said second sections 2 and said depletion zone 7 are of a second (p) conductivity type complementary to said first conduction type; and said second sections are connected to said depletion zone.

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Claim 8 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 10, Fujihira's plurality of complementary doped adjacent sections 1 and 2 run in a longitudinal direction between first terminal zone 9 and said second terminal zone 8.

Claim 10 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 13, Fujihira's semiconductor component comprises a depletion zone 7 configured between the second terminal zone 8 and the drift zone 190; the plurality of complementary doped adjacent sections 1 and 2 running between the first terminal zone 9 and the depletion zone 7.

Claim 13 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

With respect to dependent claim 11, Fujihira's plurality of complementary doped adjacent sections includes first sections 1 and second sections 2; said first sections 1 and said first terminal zone 9 are of a first (n) conduction type; said first sections are connected to said first terminal zone; said second sections 2 and said depletion zone 7 are of a second (p) conductivity type complementary to said first conduction type; and said second sections are connected to said depletion zone.

Claim 11 is thus rejected under 35 U.S.C. §103(a) as being unpatentable over Fujihira together with Letavic and Assaderaghi.

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Claim 3 is objected to as being dependent on a rejected base claim (i.e., claim 3 would be allowable over the prior art of record if claim 3 were amended to further include all the limitations of independent claim 1 and dependent claim 2).

Claim 4 is objected to as being dependent on a rejected base claim (i.e., claim 4 would be allowable over the prior art of record if claim 4 were amended to further include all the limitations of independent claim 1).

Claim 9 is objected to as being dependent on a rejected base claim (i.e., claim 9 would be allowable over the prior art of record if claim 9 were amended to further include all the limitations of independent claim 1).

Claim 12 is objected to as being dependent on a rejected base claim (i.e., claim 12 would be allowable over the prior art of record if claim 12 were amended to further include all the limitations of independent claim 1 and dependent claim 10).

Claim 14 is objected to as being dependent on a rejected base claim (i.e., claim 14 would be allowable over the prior art of record if claim 14 were amended to further include all the limitations of independent claim 1).

The prior art of record does not disclose or suggest the allowable semiconductor devices taken as a whole, including the first and second doped terminal zones.

The applicant's arguments are moot in view of the new ground of rejection.

Registered practitioners can telephone examiner Prenty at (703) 308-4939. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (703) 308-0956.

Mark Prenty